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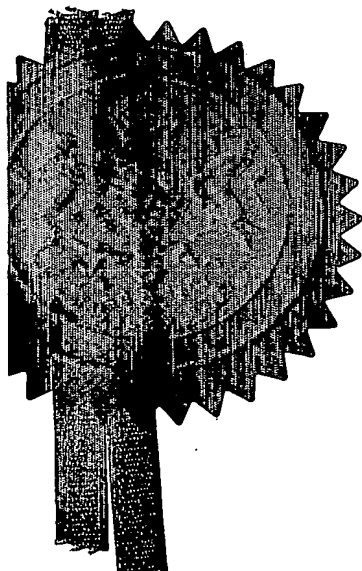
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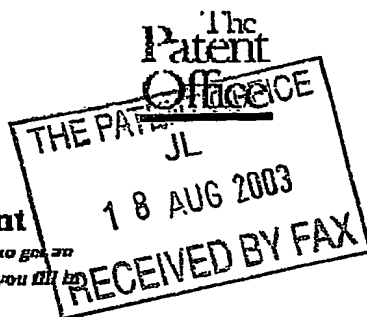
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1. Your reference

J09/B02

18 AUG 2003

2. Patent application number

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0319343.0

3. Full name, address and postcode of the or of each applicant (underline all surnames)

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Patents ADP number (if you know it)

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If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

Storage and transportation of recyclable waste

5. Name of your agent (if you have one)

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Patents ADP number (if you know it)

06777791001

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Country	Priority application number (if you know it)	Date of filing (day / month / year)
United Kingdom	0219079.1	16 August 2002
United Kingdom	0308932.3	17 April 2003

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

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Ken Targett

Date

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12. Name and daytime telephone number of person to contact in the United Kingdom

Ken Targett. Tel: 023 8060 1386

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DUPLICATE

TITLE

Storage and transportation of recyclable waste

DESCRIPTION

This invention relates generally to the storage and transportation of recyclable waste, and more particularly to an apparatus for use in the storage and transportation of recyclable waste, a method of manufacture of such an apparatus, a method of collection of recyclable waste from a neighbourhood of residential properties, and to such a neighbourhood per se.

5 In years gone past, little recycling of domestic refuse was carried out, and the Earth's resources were wasted. More recently, recycling has become more popular, and in the UK, for example, there are government incentives such as landfill tax and targets to encourage recycling. In the UK some years ago, bottle banks and paper banks were set up in many areas, and householders were requested to take their waste glass, paper and cardboard to such banks. Such schemes had
10 limited success because householders had to go out of their way to recycle their waste. In many boroughs in the UK, wheelie bins (see Figure 1 of the accompanying drawings) are now used for the storage and collection of refuse, and in some boroughs two wheelie bins are provided for each household, usually a green or grey bin for certain types of recyclable waste and a black bin for other waste. After collection, the contents of the green bins are sorted by the local authority (or their
15 contractor) into the different categories of recyclable material, for example different colours of glass, paper and card, ferrous metal, aluminium, other metals and plastics. A considerable amount of sorting needs to be carried out by the local authority. Some local authorities have attempted to involve householders more in the sorting process by providing several recycling boxes (smaller than a wheelie bin or old-fashioned dustbin and each typically having a capacity of 40 to 60 litres - see Figure 2 of
20 the accompanying drawings) for each household and persuading householders to separate out, from their general waste, recyclables such as glass, paper and card, recyclable plastics, and cans and other metal waste. These schemes are meeting with greater success than the bottle and paper banks, because the householder does not need to leave their property as part of the process, because the local authority can impose the sanction of refusing to collect refuse that had not been properly sorted
25 and because the idea of recycling has now caught on more. It is estimated that, at the time of drafting of this specification (April 2003), there are in excess of ten million such recycling boxes in use in the United Kingdom.

There are, however, problems with the recycling box schemes. The boxes are normally kept out-of-doors, where they and/or their contents can be blown around by the wind. If lids are provided
30 for the boxes, they can be blown away and lost, or used by children like a Frisbee®. Without a lid, the

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recyclables get wet in the rain and so paper and card get sodden and ferrous metals go rusty, and pets use the boxes for their toilet. On collection day, the boxes need to be lifted and carried from their normal storage place, for example on the ground outside the back door, to the collection point, for example on the pavement outside the house. The boxes are usually stored next to each other on the ground and take up a significant amount of ground area.

The present invention, or at least specific embodiments of it, addresses these problems associated with recycling box schemes.

In accordance with one aspect of the present invention, there is provided an apparatus for use in the storage and transportation of recyclable waste, the apparatus comprising a housing having a bottom for standing on the ground, a rear wall, a pair of opposed side walls, a handle adjacent the top and rear of the housing, a pair of wheels adjacent the bottom and rear of the housing arranged such that the housing can be tipped rearwardly using the handle so that the wheels engage the ground, so that the bottom of the housing no longer engages the ground and so that the apparatus can be moved on the wheels using the handle to move it, the housing providing at least one compartment accessible from the front of the housing, the or each compartment being arranged to receive a respective recycling box having a base, four side walls and an open top such that the or each recycling box can be slid into the housing from the front, such that when the or each recycling box is in the housing the top of that recycling box is covered by a portion of the housing or by the base of the recycling box above that recycling box and the front-facing side walls of the recycling box(es) substantially close the front of the housing. When the recycling box(es) are slid into the housing, they are therefore covered and their contents are protected from the elements, and they can be moved by a householder on collection day without any need for lifting.

The housing preferably provides a plurality of such compartments arranged one above another in the housing so that the housing can take up less ground area than the ground area that would be taken up by a plurality of recycling boxes arranged side-by-side on the ground.

In one embodiment, the housing provides a shelf beneath the or each compartment onto which the respective recycling box can be slid. The compartment can therefore accept a range of sizes of recycling box. However, if the apparatus is to be used only with recycling boxes of one particular size, in another embodiment, the housing provides a pair of runners to either side of the or each compartment onto which opposed lips of the respective recycling box be slid.

The top of the housing preferably has a hinged lid providing access to a further, top compartment of the housing. In this case, the sides of the top compartment may be provided by the rear wall, the side walls and a front wall of the housing. Alternatively, the top compartment may be

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arranged to receive a removable recycling tray, or may have a base and side walls to form an integral recycling tray.

In one embodiment, the housing is formed as a single plastics moulding.

5 In another embodiment, the housing is formed as a first plastics moulding providing the side walls and a rear wall of the housing, and at least two further plastics mouldings joined to the first moulding for defining the compartment(s). In this case, the first plastics moulding may be substantially identical to a standard wheelie bin except for the omission of at least part of the front wall thereof. If a wheelie bin mould is already available, this therefore reduces the tooling-up costs. At least one of the further mouldings may be arranged to be supported at least in part by a front wall of
10 the housing and/or by at least in part by another of the further mouldings.

The second moulding preferably has a least one open-fronted box portion and a flange around the open front of the box portion for abutting the first moulding, and the box portion preferably has converging walls so that, prior to assembly of the first and second mouldings, a plurality of such second mouldings can be stacked one inside the next. This enables space to be saved
15 during transportation between the factory and the place of assembly of the mouldings.

In accordance with a second aspect of the invention, there is provided an apparatus according to the first aspect of the invention, in combination with at least one such recycling box. Of course, in the case where more than one compartment is provided, a corresponding number of such recycling boxes are preferably also provided. In this case, the recycling boxes preferably have
20 substantially identical sizes.

The or each recycling box may be a standard recycling box, for example having a volumetric capacity in the range of 33 to 60 litres (and more preferably in the range of 40 or 50 to 60 litres), an external height in the range of 0.26 to 0.36 m, an external width in the range of 0.38 to 0.48 m and/or an external length in the range of 0.51 to 0.63 m.

25 In the case where the housing provides a pair of runners to either side of the or each compartment, the or each recycling box preferably has a pair of opposed lips along the upper edges of an opposed pair of side walls of that box for engaging the pair of runners of the respective compartment.

In the case where the first plastics moulding is substantially identical to a standard wheelie
30 bin except for the omission of at least part of the front wall thereof, a third aspect of the invention provides a method of manufacture of such an apparatus, the method comprising the steps of moulding a standard wheelie bin, removing at least part of the front wall therefrom to form the first

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moulding, moulding the further mouldings, and joining the first and further mouldings. A main part, if not the majority, of the apparatus can therefore be moulded using an existing mould.

Alternatively, a fourth aspect of the invention provides a method of manufacture of such an apparatus, the method comprising the steps of modifying a mould for a standard wheelie bin so that the mould produces a first moulding substantially identical to a standard wheelie bin except for the omission of at least part of the front wall thereof, moulding the further mouldings, and joining the first and further mouldings. A main part, if not the majority, of the apparatus can therefore be moulded using an existing mould with only minor modification.

In accordance with a fifth aspect of the invention, in a neighbourhood of residential properties, at least the majority of the properties are each provided with a respective apparatus according to the first or second aspect of the invention. At least some, if not all, of the apparatuses are preferably identical.

In accordance with a sixth aspect of the invention, there is provided a method of collection of recyclable waste from a neighbourhood of residential properties, the method comprising the steps of providing at one time at least some of the properties each with at least one recycling box, then collecting recyclable waste from the recycling boxes, providing at a subsequent time (which may be a year or more later) those properties each with an apparatus according to the first aspect of the invention so that the apparatus and existing recycling box(es) at each of those properties form an apparatus according to the second aspect of the invention, and then collecting recyclable waste from the apparatuses. In other words, in order to obtain the benefits of the invention, it is possible to use existing recycling boxes, estimated to number in excess of ten million in the United Kingdom in April 2003.

Specific embodiments of the present invention will now be described, purely by way of example, with reference to the accompanying drawings, all of which are isometric views, and in which:

Figure 1 shows a conventional wheelie bin;

Figure 2 shows a conventional recycling box;

Figure 3 shows a modified form of the wheelie bin of Figure 1;

Figure 4 shows a moulding used with the modified wheelie bin of Figure 3 to form a first embodiment of the invention;

Figure 5 shows the apparatus of the first embodiment of the invention, with one recycling box omitted;

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- Figure 6 shows a stack of the mouldings of Figure 4;
- Figure 7 shows a second embodiment of the invention;
- Figure 8 shows a third embodiment of the invention;
- Figure 9 shows a fourth embodiment of the invention;
- 5 Figure 10 shows another modified form of wheelie bin for use in a fifth embodiment of the invention, with its lid handle and wheels omitted for simplicity;
- Figure 11 shows three additional types of moulding for use in the fifth embodiment with insets showing enlarged views of two portions of one of the mouldings;
- Figure 12 shows the fifth embodiment of the invention;
- 10 Figure 13 shows a modification of a part of one of the mouldings of Figure 11;
- Figure 14 shows another modified form of wheelie bin for use in a sixth embodiment of the invention, with its lid handle and wheels omitted for simplicity;
- Figure 15 shows two additional types of moulding for use in the sixth embodiment;
- Figure 16 shows an assembly of the mouldings of Figure 15; and;
- 15 Figure 17 shows the sixth embodiment of the invention.

Referring to Figures 1 to 5 of the drawings, the first embodiment of the invention as shown in Figure 5 employs a conventional standard wheelie bin 10 as shown in Figure 1, three conventional standard recycling boxes 12 as shown in Figure 2 and an additional compartment moulding 14 as shown in Figure 4.

- 20 As is well-known, the wheelie bin 10 has a base 16, a front wall 18, a rear wall 20, a pair of side walls 22, a lid 24 that is hinged to the top of the rear wall 20 by an arrangement that provides a pair of handles 26, and a pair of wheels 28 on a common axis adjacent the bottom of the rear wall 20. The front and rear walls 18,20 and the side walls 22 converge slightly towards the base 16 so that, with the lids 24 open and wheels 28 removed, a plurality of such wheelie bins 10 can be stacked one
- 25 inside the next to save space during transportation between the factory and the end-user. As is also well-known, each recycling box 12 is open-topped and has a base 30, four side walls 32 and an outwardly-extending lip 33 around the tops of the side walls 32. Again, the side walls 32 converge slightly towards the base 30 so that plurality of such recycling boxes 12 can be stacked one inside the next to save space during transportation between the factory and the end-user. Typically, the recycling

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box 12 would have a capacity of 53 litres and external dimensions WxLxH of 440 mm x 570 mm x 330 mm.

5 The compartment moulding 14 is formed as three similar open-fronted boxes 34 each having a base 36, a top wall 38, a pair of side walls 40 and a rear wall. The boxes 34 are integrally joined together in a row by a flange portion 44 around the open fronts of the boxes 34. Each open-fronted box 34 is sized interiorly to accommodate a recycling box 12 and for the recycling box described above may have an interior width, depth and height of 480 mm x 570 mm x 360 mm.

10 In order to provide the first embodiment of the invention, three rectangular holes 46 are cut, one above another, in the front wall 18 of the wheelie bin 10, as shown in Figure 3. The holes 46 have a vertical pitch equal to the vertical pitch of the boxes 34 of the compartment moulding 14. The width of each hole 46 is slightly larger than the exterior width of each box 34 immediately behind the flange portion 44, and the height of each hole 46 is slightly larger than the exterior height of each box 34 immediately behind the flange portion 44. The compartment moulding 14 is assembled with the wheelie bin 10 by inserting the boxes 34 into the holes 46 and fixing the flange portion 44 to the front wall 18 of the wheelie bin 10, for example with adhesive, welding, snap-fit formations or screws. Accordingly, as shown in Figure 5, three vertically-aligned, open-fronted compartments 48 are provided in the wheelie bin 10, into each of which a respective recycling box 12 can be slid, being supported by the base 36 of the respective open-fronted box. When all three recycling boxes 12 are fully inserted into their compartments, the front walls 32 of the boxes 12 substantially close the front wall 18 of the wheelie bin 10. The top of each recycling box 12 is covered by the respective top wall 38 of the respective open-fronted box 34 to protect the contents of the recycling box 12 from the elements. By being shrouded by the wheelie bin 10, the recycling boxes 12 are unlikely to be blown away in the wind.

25 As shown in Figure 6, the base 36, top 38 and side walls 40 of each open-fronted box 34 of the compartment moulding 14 converge slightly towards the rear wall so that a plurality of such compartment mouldings 14 can be stacked one inside the next to save space during transportation between the factory and the place of assembly of the compartment mouldings 14 with the wheelie bins 10.

30 In a modification to the first embodiment, instead of the three holes 46 being cut in the front wall 18 of the conventional wheelie bin 10, the mould for the wheelie bin 10 is modified so that the holes 46 are formed at the time of moulding of the wheelie bin 10.

The second embodiment of the invention, as shown in Figure 7, is similar to the first embodiment except that the mould for the wheelie bin is modified so that the bases 36, tops 38, side walls 40 and rear walls of the compartments 48 are integrally moulded with the housing for the

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wheelie bin 10. Also, a shallow tray 50 at the top of the wheelie bin 10 is integrally moulded with front, rear wall and side walls 18,20,22 and is accessible by lifting the lid 24.

5 The third embodiment of the invention, as shown in Figure 8, is similar to the second embodiment except that, instead of providing a base 36, top 38, side walls 40 and rear wall for each compartment 48, a pair of generally-horizontal, mutually-parallel runners 52 are provided extending rearwardly from the respective hole 46 in the front wall 18 of the wheelie bin 10. The spacing of the runners 52 is such that they can support the recycling boxes 12 beneath their lips 33 and allow the recycling boxes 12 to be slid in and out. Also, in the third embodiment, the top tray 50 is removable and has a pair of lifting handles 54.

10 The fourth embodiment of the invention, as shown in Figure 9, uses the technique of the third embodiment to provide a single recycling box 12 on runners 52 near the bottom of the wheelie bin 10 and includes a horizontal partition, as indicated by the dash-dot line 56, immediately above the recycling box 12 so that the space 58 above the partition 56 can be used for general refuse.

The fifth embodiment of the invention will now be described with reference to Figures 10 to 12. The fifth embodiment employs a conventional wheelie bin 10 as described above with reference to Figure 1 of the drawings. For simplicity in Figures 10 and 12, the lid, wheels and handle of the wheelie bin 10 are not shown. The wheelie bin is modified as shown in Figure 10 by cutting three rectangular holes 46 in the front wall 18 of the bin (similarly to as described with reference to Figure 3). Also, two slots 60,61 are cut in each of the side walls 22 of the bin 10, each slot 60,61 being generally level with a respective rail portion 62,63 of the front wall 18 between the holes 46, each slot 60,61 being adjacent the rear wall 20 of the bin, and the slots 60,61 being a constant distance D from the front wall 18 of the bin 10 despite the front and rear walls 18,20 converging towards each other in the downwards direction. The fifth embodiment also employs three identical shelf mouldings 64 and two rails 66,68 as shown in Figure 11. Each shelf moulding 64 comprises a rectangular floor 70 with short, upstanding walls 72,74 along its side and rear edges. Also, the front edges of the floor 70 and side walls 72 are provided with a double lip to form a channel 76 that faces downwardly from the front edge of the floor 70 and outwardly from the side walls 72. Furthermore, the rear edge of the floor 70 is provided with a double lip to form a channel 78 that faces downwardly from the rear edge of the floor 70. Each rail 66,68 is a formed by a moulded rectangular-section bar with notches 80,82 adjacent its ends. The distance between the notches 80 of the rail 66 is generally equal to the distance between the lower slots 60 in the side walls 22 of the wheelie bin 10, and the distance between the notches 82 of the rail 68 is generally equal to the distance between the upper slots 62 in the side walls 22 of the wheelie bin 10. The distances between the notches 80 and between the notches 82 therefore differ due to the side walls 22 of the bin 10 converging towards each other in the downwards direction.

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In order to assemble the fifth embodiment of the invention, a first one of the shelf mouldings 64 is inserted into the bin 10, and the upper edge of the lower rail portion 84 of the front wall 18 of the bin 10 beneath the lower hole 46 is engaged in the front channel 76 of the shelf moulding 64, with the upturned ends of the front channel 76 engaging the lower portions of the sides of the lower hole 46. The rear channel 78 of the shelf moulding 64 is allowed to rest on the base 16 of the wheelie bin 10. Accordingly, the lower shelf moulding 64 is supported by the rail portion 84 of the front wall 18 of the bin 10 and by the base 16 of the bin 10. The rail 66 is then placed into the bin 10 and its ends are inserted into the lower slots 60 in the side walls 22 of the bin 10 with the notches 80 facing downwards and being engaged by the lower ends of the slots 60 so that the rail 66 is held in place. A second one of the shelf mouldings 64 is then inserted into the bin 10, and the upper edge of the rail portion 62 of the front wall 18 of the bin 10 beneath the middle hole 46 is engaged in the front channel 76 of the shelf moulding 64, with the upturned ends of the front channel 76 engaging the lower portions of the sides of the middle hole 46. The rail 66 is engaged in the rear channel 78 of the shelf moulding 64. Accordingly, the middle shelf moulding 64 is supported by the rail portion 62 of the front wall 18 of the bin 10 and by the rail 66 extending between the slots 60 in the side walls 22 of the bin 10. The rail 68 is then placed into the bin 10 and its ends are inserted into the upper slots 61 in the side walls 22 of the bin 10 with the notches 82 facing downwards and being engaged by the lower ends of the slots 61 so that the rail 68 is held in place. The third shelf moulding 64 is then inserted into the bin 10, and the upper edge of the rail portion 63 of the front wall 18 of the bin 10 beneath the upper hole 46 is engaged in the front channel 76 of the shelf moulding 64, with the upturned ends of the front channel 76 engaging the lower portions of the sides of the upper hole 46. The rail 68 is engaged in the rear channel 78 of the shelf moulding 64. Accordingly, the upper shelf moulding 64 is supported by the rail portion 63 of the front wall 18 of the bin 10 and by the rail 68 extending between the slots 61 in the side walls 22 of the bin 10. The assembled apparatus is shown in Figure 12.

A modification to the fifth embodiment is shown in Figure 13. The rear channel 78 of each shelf moulding 64 is closed, rather than open, at its bottom to form a rectangular passageway 84 extending across the rear of the shelf moulding 64. Also, instead of employing two different rails 66, 68, four identical half-rails are used, each similar to slightly less than half of the length of the rail 66 of Figure 11. The positions of the half-rails in the passageway 84 can therefore be adjusted so as to suit the different spacings between slots 60 and between the slots 61 in the side walls 22 of the bin 10.

The sixth embodiment of the invention will now be described with reference to Figures 14 to 17. As shown in Figure 14, the sixth embodiment employs a conventional wheelie bin 10 that is modified similarly to that shown in Figure 10 by cutting three rectangular holes 46 in the front wall 18 of the bin; however, slots 60, 61 are not cut in the side walls 22 of the bin 10. The sixth embodiment also employs three identical shelf mouldings 86 and eight identical moulded rods 88 as shown in

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Figure 15. Each shelf moulding 86 comprises a rectangular floor 90 with short, upstanding walls 92,94 inset from its side and rear edges. The size of the floor 90 is such that it is a snug fit in the bin 10 at the level of the upper edge of the rail portion 63 formed below the upper hole 46 in the front wall 18 of the bin 10. The floor 90 has a cut or break line 96 marked on it or formed in it (for example by thinning of the thickness of the floor 90) inset from the side and rear edges of the floor 90, such that when the marginal side and rear edges of the floor 90 are cut or broken off along the line 96, the size of the remainder of the floor 90 is such that is a snug fit in the bin 10 at the level of the upper edge of the rail portion 62 formed below the middle hole 46 in the front wall 18 of the bin 10. The floor 90 also has another cut or break line 98 marked on it or formed in it, further inset from the side and rear edges of the floor 90, such that when the marginal side and rear edges of the floor 90 are cut or broken off along the line 98, the size of the remainder of the floor 90 is such that is a snug fit in the bin 10 at the level of the upper edge of the rail portion 84 formed below the lower hole 46 in the front wall 18 of the bin 10. Between each side wall 92 and the inner cut/break line 98, a pair of sockets 100 are formed on the upper surface of the floor 90. Also, four sockets 102 are formed on the lower surface of the floor 90, each beneath a respective one of the upper sockets 100, but offset rearwardly therefrom.

In order to assemble the sixth embodiment of the invention, the marginal edges of the floor 90 of a first one of the shelf mouldings 86 are cut or broken off along the inner cut/break line 98, and the shelf moulding 86a thus formed is placed in the wheelie bin 10 so that its lower sockets 102 rest on the base 16 of the bin 10. The height of the lower sockets 102 is such that the upper surface of the floor 90 of the shelf moulding 86a is level with the upper edge of the rail portion 84 beneath the lower hole 46 in the front wall 18 of the bin 10, and the spacing between the side walls 92 of the shelf mouldings 86 is equal to the width of the holes 46 in the front wall 18 of the bin 10. The lower ends of four of the rods 88 are then placed in the four upper sockets 100 of the shelf moulding 86a. The marginal edges of the floor 90 of a second one of the shelf mouldings 86 are cut or broken off along the outer cut/break line 96, and the shelf moulding 86b thus formed is placed in the wheelie bin 10 so that its lower sockets 102 engage the upper ends of the four rods 88. The length of the rods 88 is such that the upper surface of the floor 90 of the shelf moulding 86b is level with the upper edge of the rail portion 62 beneath the middle hole 46 in the front wall 18 of the bin 10. The lower ends of the remaining four rods 88 are then placed in the four upper sockets 100 of the shelf moulding 86b. The third shelf moulding 86 is then placed in the wheelie bin 10 so that its lower sockets 102 engage the upper ends of the upper four rods 88. The offset between the upper and lower sockets 100,102 of each shelf moulding 86,86a,86b is such that, when assembled, the rods 88 are vertical despite the front edges of the shelf mouldings 86,86a,86b not being vertically aligned. The assembled shelf mouldings 86,86a,86b and rods 88, without the bin 10, are shown in Figure 16, and the complete assembled apparatus is shown in Figure 17.

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In use of the fifth and sixth embodiments of Figures 10 to 17, recycling boxes 12 as described above in connection with the first to fourth embodiments may be slid through the holes 46 in the front wall 18 of the bin 10 into the compartments above the shelf mouldings 64 or 86, 86a, 86b. Although not shown in Figures 10 to 17, the bin 10 has a lid 24, wheels 28 and handles 26 similarly to the other embodiments. Also, the bin 10 may be provided with a top tray 50 as described above with reference to Figure 7 or 8.

The techniques of the fifth and sixth embodiments of the invention may be combined. For example, the technique using the channel 76 to support the front of each shelf moulding on the front wall 18 of the bin 10 may be combined with the technique using the sockets 100, 102 and rods 88 to support the rear, or the rear and the front, of each shelf moulding.

In the fifth and sixth embodiments, the exposed cut edges of the holes 46 in the front wall 18 of the bin 10 may be covered with an edging strip.

Various modifications and developments may be made to the embodiments of the invention described above. For example, in the case where the local authority does not collect all types of recyclable waste on the same day, the side of the bin 10 may be provided with a pouch into which the collector can slip a card listing the collection dates and the types of waste collected on each date. One or more of the recycling boxes 12 may be provided with one or more vertical partition walls so that it can be used for more than one type of recyclable waste. The lid 24 of the bin 10 may be flat and may be used by the collector as a platform on which to place the recycling boxes while their contents are checked. One or more hooks may be provided on the bin, for example near the handle, onto which bags of other types of recyclable waste could be hung ready for collection. For example, local authorities could provide residents with distinctive bags for use when disposing of batteries.

It should be noted that the embodiments of the invention have been described above purely by way of example and that many modifications and developments may be made thereto within the scope of the present invention.

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CLAIMS

(The reference numerals and figure numbers appearing in parentheses in the claims are not intended to limit the scope of the protection sought or granted.)

1. An apparatus for use in the storage and transportation of recyclable waste, the apparatus comprising a housing (10) having a bottom (16) for standing on the ground, a rear wall (20), a pair of opposed side walls (22), a handle (26) adjacent the top and rear of the housing, a pair of wheels (28) adjacent the bottom and rear of the housing arranged such that the housing can be tipped rearwardly using the handle so that the wheels engage the ground, so that the bottom of the housing no longer engages the ground and so that the apparatus can be moved on the wheels using the handle to move it, the housing providing at least one compartment (48) accessible from the front of the housing, the or each compartment being arranged to receive a respective recycling box (12) having a base (30), four side walls (32) and an open top such that the or each recycling box can be slid into the housing from the front, such that when the or each recycling box is in the housing the top of that recycling box is covered by a portion of the housing or by the base of the recycling box above that recycling box and the front-facing side walls of the recycling box(es) substantially close the front of the housing.
2. An apparatus as claimed in claim 1, wherein the housing provides a plurality of such compartments arranged one above another in the housing.
3. An apparatus as claimed in claim 1 or 2, wherein the housing provides a shelf (36) beneath the or each compartment onto which the respective recycling box can be slid.
4. An apparatus as claimed in claim 1 or 2, wherein the housing provides a pair of runners (52) on either side of the or each compartment onto which opposed lips (33) of the respective recycling box be slid.
5. An apparatus as claimed in any preceding claim, wherein the top of the housing has a hinged lid (24) providing access to a further, top compartment (50;58) of the housing.
6. An apparatus as claimed in claim 5, wherein the sides of the top compartment are provided by the rear wall, the side walls and a front wall of the housing (Figure 9).
7. An apparatus as claimed in claim 5, wherein the top compartment is arranged to receive a removable recycling tray (50 - Figure 8).

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8. An apparatus as claimed in claim 5, wherein the top compartment has a base and side walls to form an integral recycling tray (50 - Figure 7).
9. ~~An apparatus as claimed in any preceding claim, wherein the housing is formed as a single moulding (Figures 7 to 9).~~
- 5 10. An apparatus as claimed in any of claims 1 to 8, wherein the housing is formed as a first moulding (10) providing the side walls and a rear wall of the housing, and at least two further mouldings (64,86) joined to the first moulding for defining the compartment(s) (Figures 10 to 17).
11. An apparatus as claimed in claim 10, wherein the first plastics moulding is substantially identical to a standard wheelie bin except for the omission of at least part of the front wall (18) thereof.
- 10 12. An apparatus as claimed in claim 10 or 11, wherein at least one of the further mouldings (64) is arranged to be supported by at least in part by a front wall of the housing.
13. An apparatus as claimed in claim 12, wherein at least one of the further mouldings (86) is arranged to be supported by at least in part by another of the further mouldings.
- 15 14. An apparatus as claimed in any preceding claim, in combination with at least one such recycling box (12).
15. An apparatus as claimed in claim 14 when dependent directly or indirectly on claim 2, wherein there is a plurality of such recycling boxes.
16. An apparatus as claimed in claim 15, wherein the recycling boxes have substantially identical sizes.
- 20 17. An apparatus as claimed in any of claims 14 or 16, wherein the or each recycling box has a volumetric capacity in the range of 40 to 60 litres.
18. An apparatus as claimed in any of claims 14 to 17, wherein the or each recycling box has an external height (H) in the range of 0.26 to 0.36 m.
- 25 19. An apparatus as claimed in any of claims 14 to 18, wherein the or each recycling box has an external width (W) in the range of 0.38 to 0.48 m.
20. An apparatus as claimed in any of claims 14 to 19, wherein the or each recycling box has an external length (L) in the range of 0.51 to 0.63 m.

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21. An apparatus as claimed in any of claims 14 to 20 when directly or indirectly dependent on claim 4, wherein the or each recycling box has a pair of opposed lips (33) along the upper edges of an opposed pair of side walls (32) of that box for engaging the pair of runners (52) of the respective compartment.

5 22. An apparatus for use in the storage and transportation of recyclable waste, substantially as described with reference to the drawings.

23. A method of manufacture of an apparatus as claimed in claim 11, or any of claims 12 to 21 when dependent on claim 11, the method comprising the steps of moulding a standard wheelie bin (10 - Figure 1), removing at least part of the front wall (18) therefrom to form the first moulding (10 - Figure 10 or 14), moulding the further mouldings (64,86), and joining the first and further mouldings.

24. A method of manufacture of an apparatus as claimed in claim 11, or any of claims 12 to 21 when dependent on claim 11, the method comprising the steps of modifying a mould for a standard wheelie bin so that the mould produces a first moulding (10 - Figure 10 or 14) substantially identical
15 to a standard wheelie bin except for the omission of at least part of the front wall (18) thereof, moulding the further mouldings (64,86), and joining the first and further mouldings.

25. A method of manufacture of an apparatus for use in the storage and transportation of recyclable waste, substantially as described with reference to the drawings.

26. A neighbourhood of residential properties, at least the majority of the properties each being
20 provided with a respective apparatus as claimed in any of claims 1 to 22.

27. A neighbourhood as claimed in claim 26, wherein at least some of the apparatuses are identical.

28. A method of collection of recyclable waste from a neighbourhood of residential properties, the method comprising the steps of providing at one time at least some of the properties each with at
25 least one recycling box (12), then collecting recyclable waste from the recycling boxes, providing at a subsequent time those properties each with an apparatus as claimed in any of claims 1 to 13 so that the apparatus and existing recycling box(es) at each of those properties form an apparatus as claimed in any of claims 14 to 21, and then collecting recyclable waste from the apparatuses.

29. A method as claimed in claim 28, wherein said subsequent time is at least one year after said
30 one time.

TITLE

Storage and transportation of recyclable waste

ABSTRACT

An apparatus for use in the storage and transportation of recyclable waste comprises a housing (10) having a bottom for standing on the ground, a rear wall, a pair of opposed side walls (22), a handle (26) adjacent the top and rear of the housing, a pair of wheels (28) adjacent the bottom and rear of the housing arranged such that the housing can be tipped rearwardly using the handle so that the wheels engage the ground, so that the bottom of the housing no longer engages the ground and so that the apparatus can be moved on the wheels using the handle to move it, the housing providing at least one compartment (48) accessible from the front of the housing, the or each compartment being arranged to receive a respective recycling box (12) having a base, four side walls and an open top such that the or each recycling box can be slid into the housing from the front, such that when the or each recycling box is in the housing the top of that recycling box is covered by a portion of the housing or by the base of the recycling box above that recycling box and the front-facing side walls of the recycling box(es) substantially close the front of the housing. Existing recycling boxes can be used. When the recycling box(es) are slid into the housing, they are covered and their contents are protected from the elements, and they can be moved by a householder on collection day without any need for lifting.

Figure 5

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FIG. 1

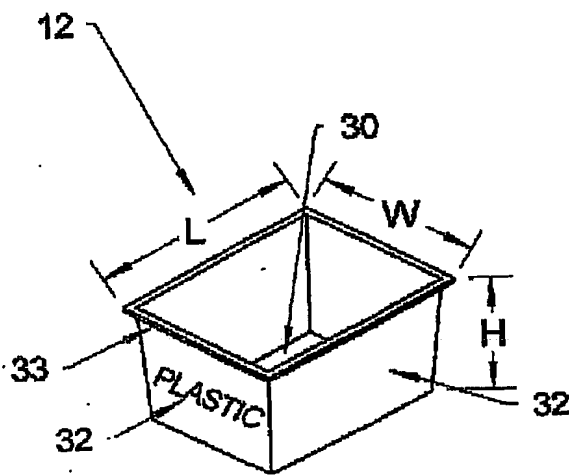
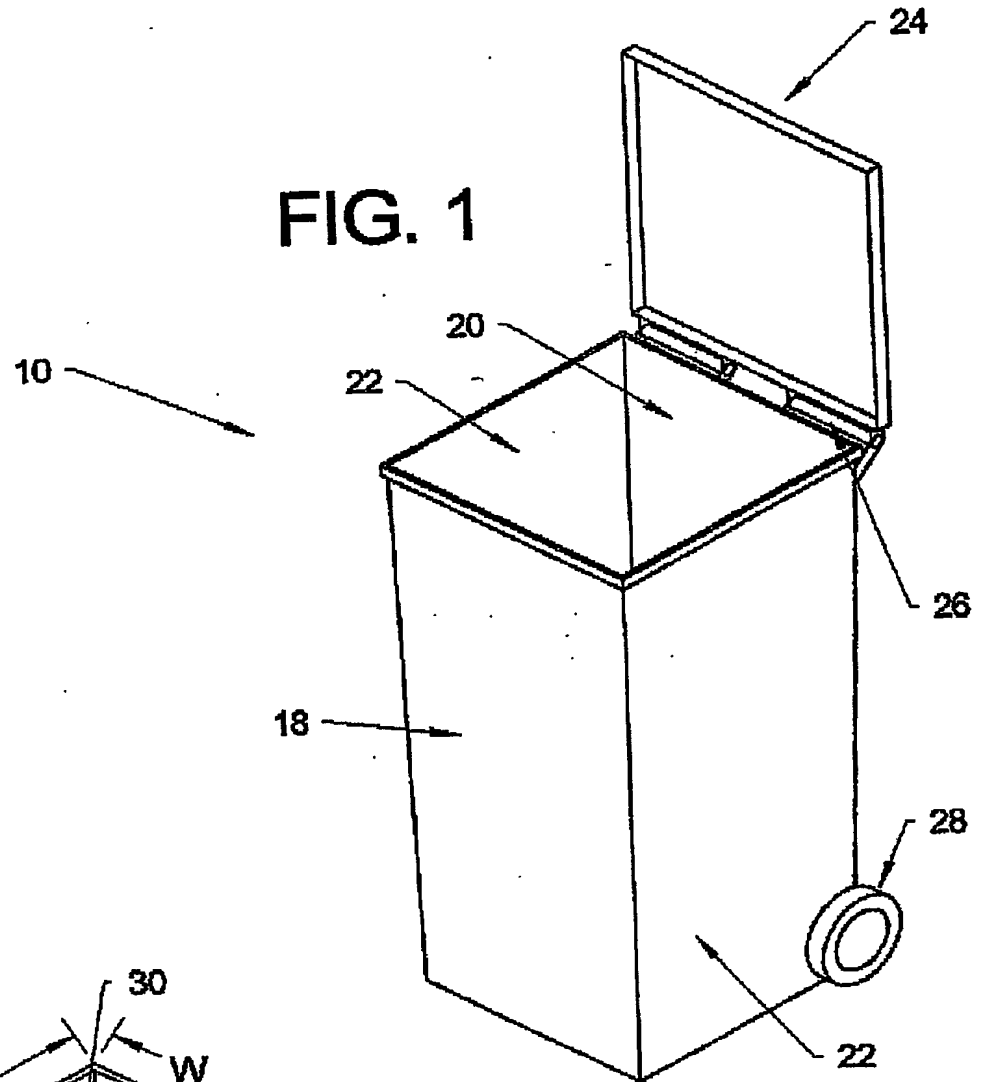


FIG. 2

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FIG. 4

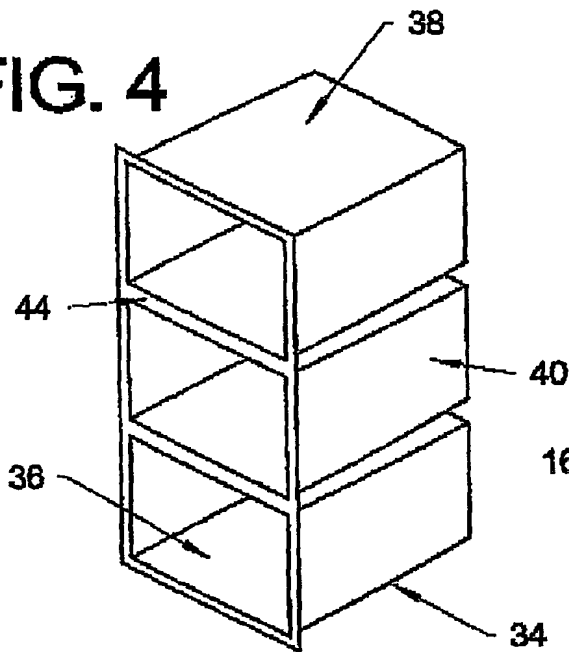


FIG. 3

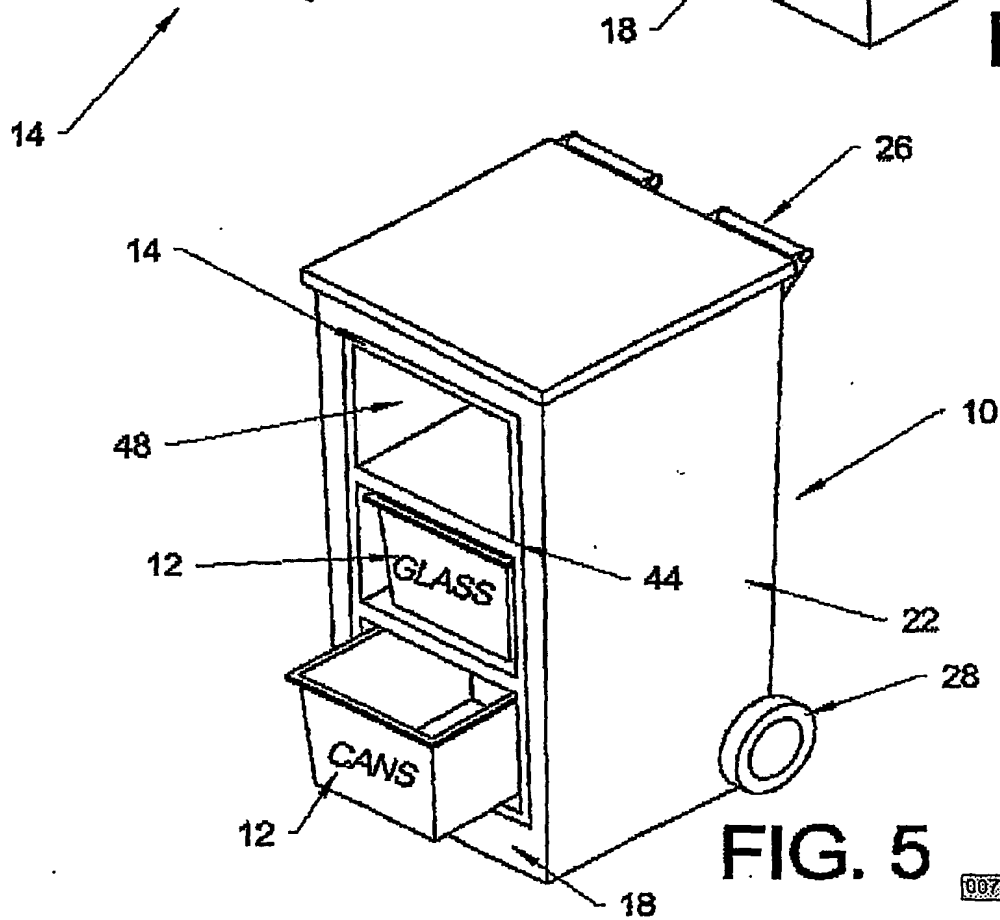
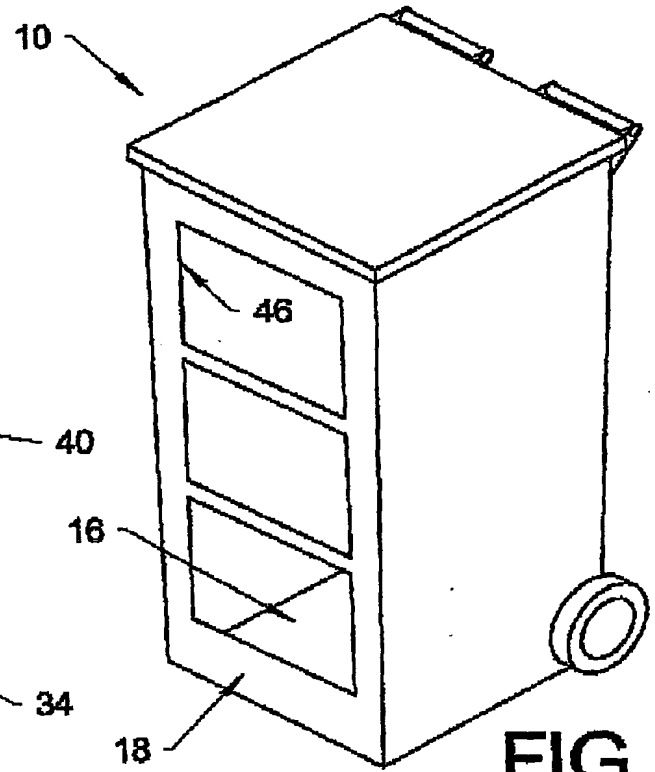


FIG. 5

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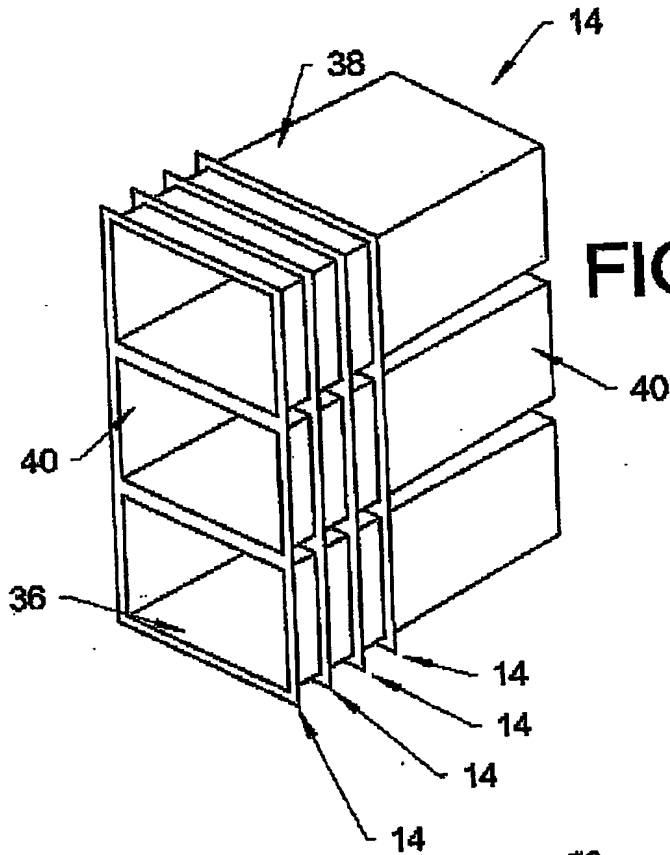
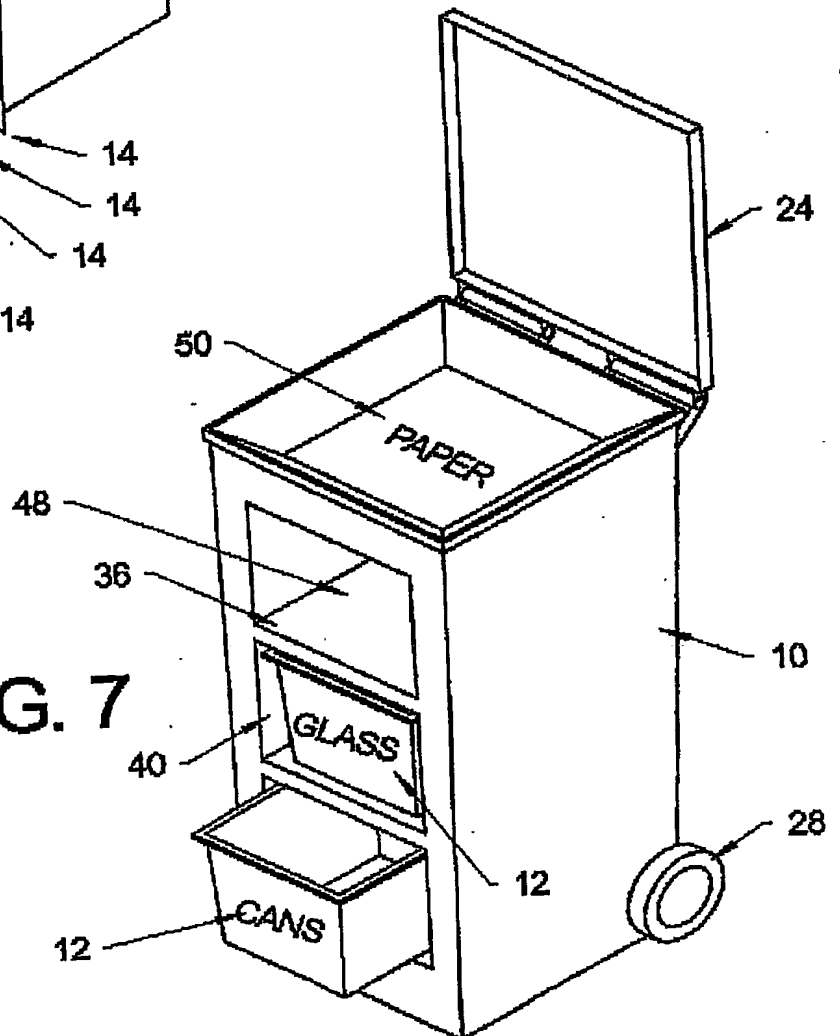


FIG. 7



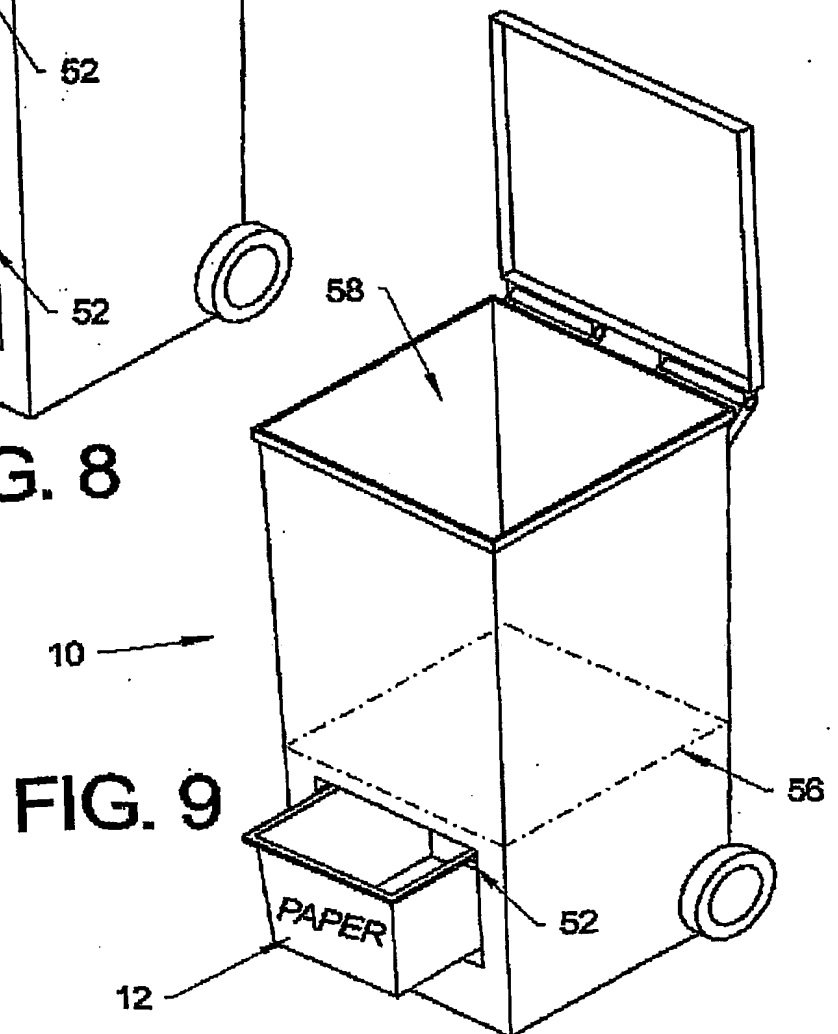
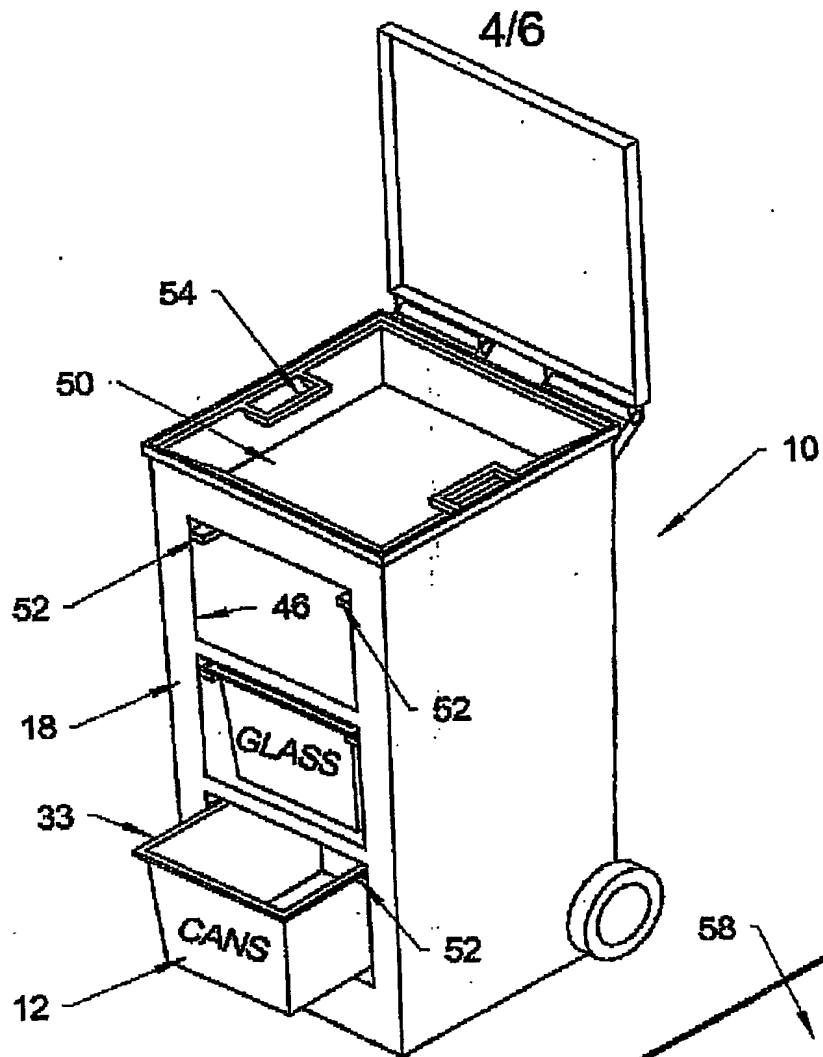


FIG. 10

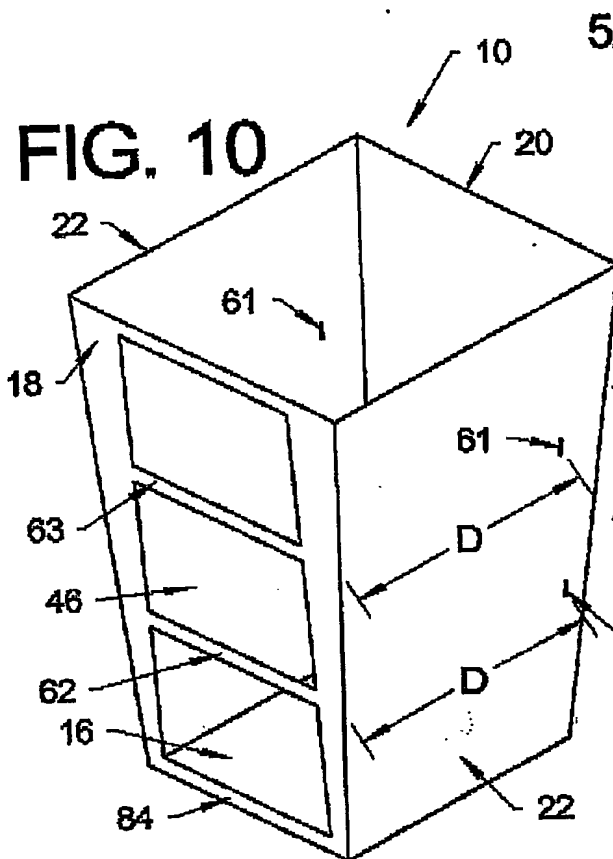


FIG. 12

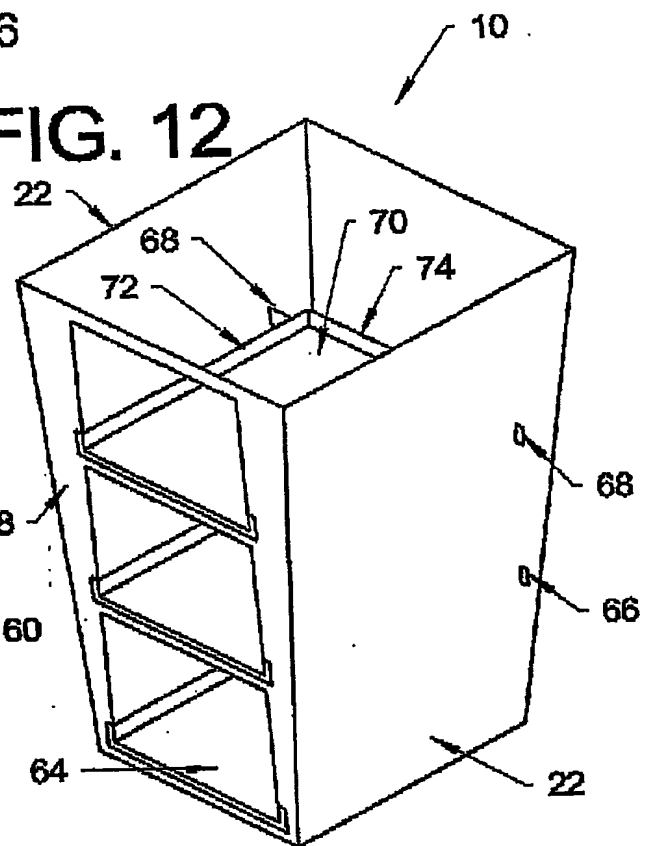


FIG. 11

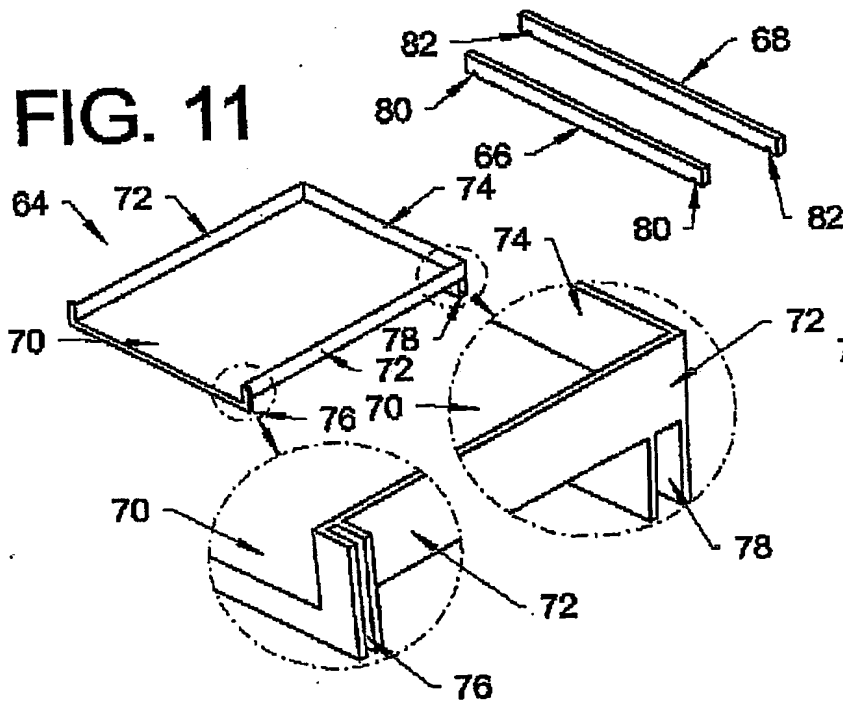
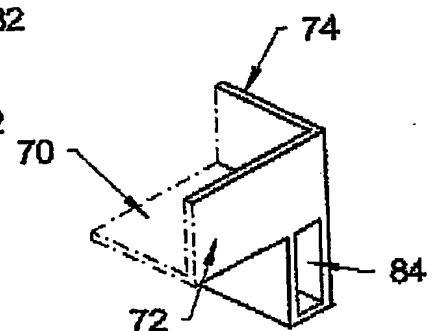
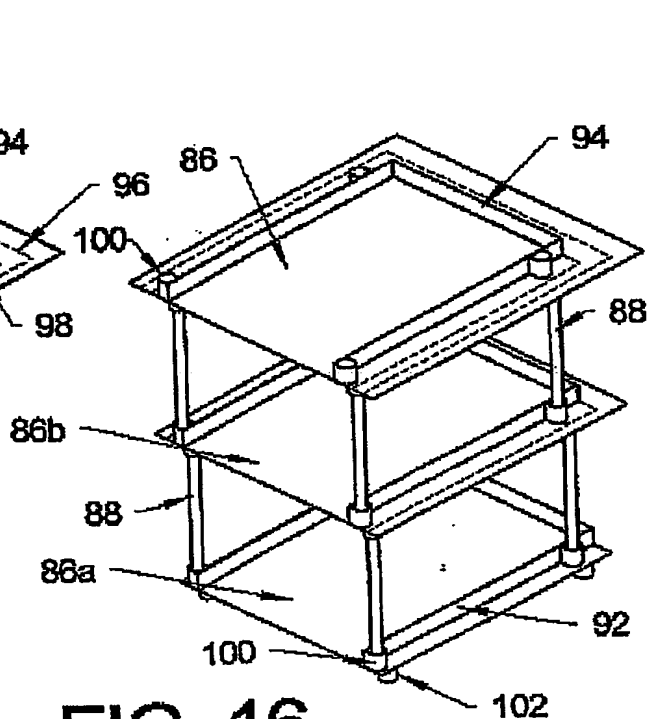
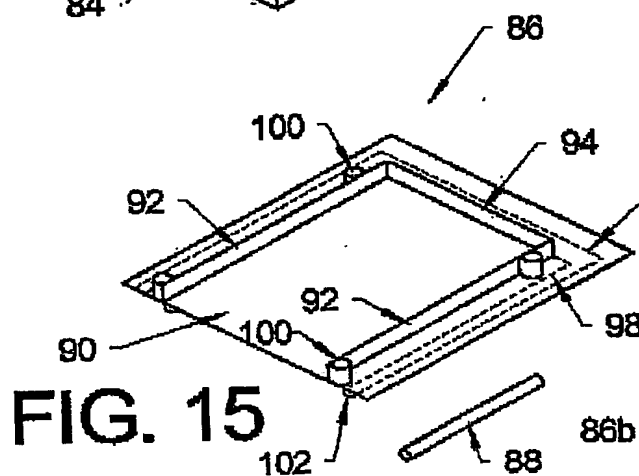
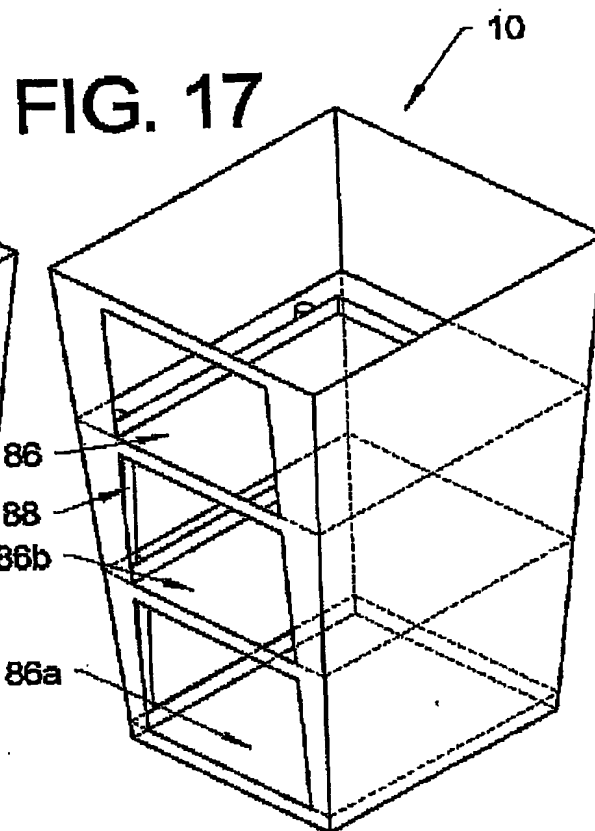
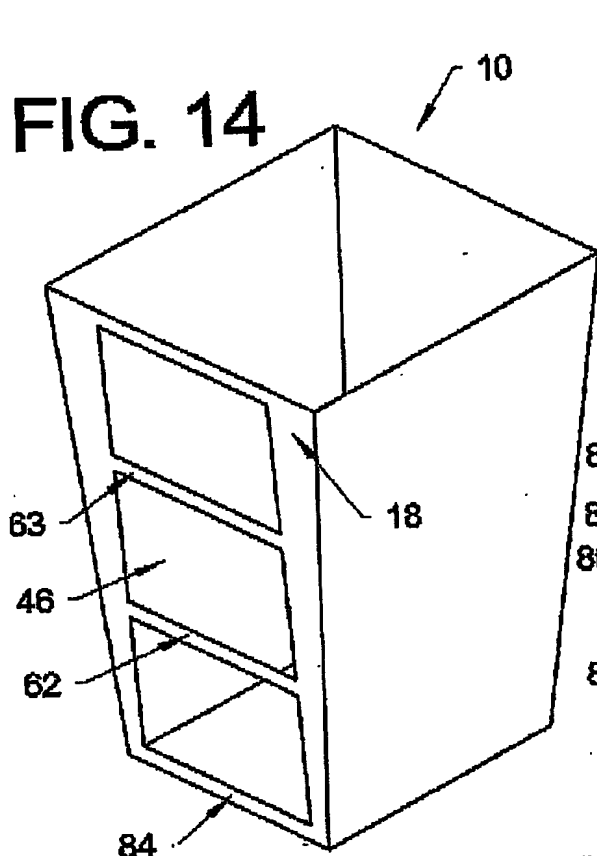


FIG. 13



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